

RESEARCH ARTICLE

Surgical Results Of Chordee Without Hipospadias

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Abstract

Introduction: Congenital penile curvature is an anomaly that often accompanies hypospadias. It is the abnormal curvature of the erected penis without any abnormality in penile chord meatal position without hypospadias and it is a rare condition. We aimed to review our experiences in the light of the literature by presenting our cases of congenital chordee without hypospadias that we operated on in pediatric patients

Methods: The data of the patients who were operated in our clinic between January 2020 and June 2022 for congenital chord without hypospadias were analyzed retrospectively. Patients who had previous surgical procedures were excluded from the study

Results: Seventeen patients were included in the study. The ages of the patients were determined as 23-176 months (median 91.8 months). It was observed that the chordee degree of the patients was between 30-90 degrees. Seven of the 17 patients had chordee after degloving of the penis, that is, they had skin chordee. Heineke-Mikulicz plication was performed in 5 of the remaining ten patients and tunical plication was performed in 3 patients. Two patients with ventral cords underwent corporotomy and ventral grafting in their follow-up.

Conclusion: The vast majority of penile cords without hypospadias can be corrected with simple degloving or plication techniques. No matter what technique we use, the protection of neurovascular structures and the urethral plate should be our main goal. Although penile cordis without hypospadias is rare, we argue that it can be performed in experienced centers with low complication rates and successful results.

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Introduction

While congenital penile curvature is a defect that often accompanies hypospadias, cordee without hypospadias which is a rare condition is the abnormal curvature of the erected penis in the absence of urethral meatal position abnormality. It is also called hypospadiasm without hypospadias, pseudohypospadias, congenital short urethra.¹

The prevalence of penile curvature was found to be 0.037% by Ebbehoj and Metz, and 0.6% by Yachia. Chordee without hypospadias must be a more rare condition although we could not find its prevalence in current literature.^{2,3} There is no consensus on the timing and how to treat congenital penile curvature detected in childhood. While some authors advocate early correction, others prefer correction in adolescence.

We aimed to review our experiences in the light of the literature by presenting our cases of congenital chordee without hypospadias that we operated on in pediatric patients.

Material and Methods

The data of the patients who were operated in our clinic between January 2020 and June 2022 for congenital chord without hypospadias were analyzed retrospectively. Patients who had previous surgical procedures were excluded from the study. Indications for surgery: preputial anomalies, family complaints due to penile curvature during erection, and curvature of more than 30 degrees during natural erection on examination.

Picture1,2:Pre-operative chordee pictures

Picture 1



Picture 2



Surgical technique:

In all cases, the penile skin was degloved up to the root of the penis after circumcision incision. After degloving, the degree of curvature was measured with a goniometer, after achieving an arti-

ficial erection with a 21-Gauge butterfly needle by applying finger compression to the penopubic region without applying a tourniquet (picture 3). Penile deformity was evaluated in artificial erection, curvature direction, degree, and plaque-containing area were recorded in the operating note. Patients whose penis straightened during the artificial erection test were considered to have skin cord. The chordee type of the patients was classified according to Kramer's classification of chordee without hypospadias.

Picture 3: Per-op artificial erection test



Results

Seventeen patients were included in the study. The ages of the patients were determined as 23-176 months (median 91.8 months). It was observed that the chordee degree of the patients was between 30-90 degrees. It was observed that in 7 of 17 patients, the cordee improved after the penis was degloved with a circumcision incision, that is, these 7 cases had a skin cordee. Of the remaining 10 patients, 5 underwent Heineke-Mikulicz and 3 underwent Baskin. In two patients with ventral cordis, the urethra was cut from the subcoronal region and corporotomy was performed as cordis persisted. Ventral grafting and urethroplasty were performed in the follow-up of the patient who became hypospadiac.. It was observed that 5 of 17 patients had circumcision before and only one of them recovered after penile degloving.

Post operative ; Ecchymosis was observed in one patient and hematoma was observed in one patient who underwent corporotomy.

It was evaluated by physical examination and erection observation by the patient and/or parent at follow-up after correction of the chordee.

In the follow-ups, chordee was completely re-

covered in all other patients who had ventral ten degree chordee in one patient who underwent corporotomy.

Picture 4,5: Post-operative pictures

Picture 4

Picture 5



Picture 6,7: Post-operative pictures of the patient who underwent corporotomy and ventral grafting

Picture 6



Picture 7



TABLE 1: Type, direction and surgical method of chordee

Patient number	Age (Month)	Age (Month)	Direction of chordee	Degree	Type of chordee	Surgical method	Post-op chordee degree
Patient 1	85		Right dorsal	40	2	Heineke- Mikulicz	0
Patient 2	110		Right dorsal	60	4	Heineke- Mikulicz	0
Patient 3	120		Right lateral	30	3	Tunical plication	0
4. Patient	23		Right lateral	60	Skin cordee	Deglove	0
5. Patient	74		Left lateral	40	3	Tunical plication	0
6. Patient	84		Left lateral	30	Skin cordee	Deglove	0
7. Patient	43		Left lateral	80	4	Heineke- Mikulicz	0
8. Patient	40		Left lateral	45	4	Heineke- Mikulicz	0
9. Patient	60		ventral	30	Skin cordee	Deglove	0
10. Patient	112		ventral	30	Skin cordee	Deglove	0
11. Patient	133		ventral	90	5	Corporotomy	10
12. Patient	159		ventral	90	5	Corporotomy	0
13. Patient	32		ventral	35	Skin cordee	Deglove	0
14. Patient	112		ventral	30	Skin cordee	Deglove	0
15. Patient	176		ventral	30	3	Heineke- Mikulicz	0
16. Patient	130		ventral	30	Skin cordee	Deglove	0
17. Patient	69		ventral	40	3	Tunical plication	0

Discussion

Due to the rarity of chordee without hypospadias, there is still no consensus among surgeons on its surgical treatment.

In 1937, Young suggested that the chordee without hypospadias was connected to the congenitally short urethra.⁴

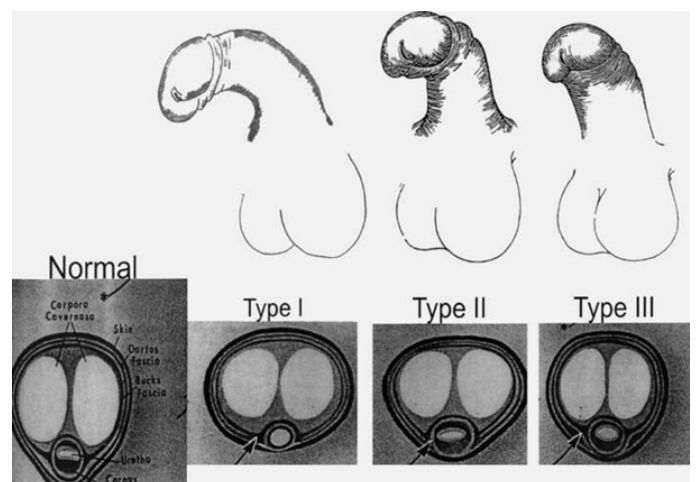
Devine and Horton divided chordees without hypospadias into three:⁵

In type 1, there is deficiency in the corpus spongiosum, buck fascia and dartos fascia in the chordee region.

In type 2, the corpus spongiosum is normal, there is dysgenesis in dartos and buck's fascia.

In type 3, the corpus spongiosum and buck's fascia are lacking in the normal dartos fascia.

Figure 1. Devine and Horton classification of chordee without hypospadias



Kramer et al. added type 4, which is caused by disproportion in the corpus cavernosum, and type 5, which is called congenital short urethra.⁶⁻¹⁰ Surgical treatment gives successful results in cases of chordee without hypospadias, and in most of them,

the curvature can be corrected with a single operation.

It has been reported in the literature that 36-39% of patients have skin cordial.¹¹ In our series, 41% of them were found to have skin cord and this was compatible with the literature.

Most of the cases are ventral, but it can also be lateral and rarely dorsal.¹² In our series, 9 patients had ventral, 2 patients had dorsal and 6 patients had lateral chordee.

The first plication technique for the treatment of curvature was described by Nesbit in 1965. In the Nesbit technique, transverse elliptical excisions are made from the tunica. Elliptical excisions are sutured and closed transversely.¹³ The Nesbit technique was modified by Kelami. In the Kelami technique, the tunica tissue to be removed is held with an allis clamp beforehand, its location is determined, and it is excised under the clamp.¹⁴ In the Heineke-Mikulicz method, the incisions in the longitudinal tunica are cut and the transverse is closed with the alis clamp.¹⁵ In 1985, Essed and Schroder described the tunical plication technique without tissue excision or incision.¹⁶ In patients with severe penile curvature, the short side should be lengthened by grafting. Many grafts, including autologous, allograft and synthetic, and many surgical methods have been defined as grafts.

In the study of Polat et al., 16 (53%) of 30 patients with penile chord without prepubertal hypospadias improved with penile degloving. In our series, 1 of 17 patients was postpubertal, and 7 (43%) of the remaining 16 patients were found to be resolved with penile degloving. In the study of Polat et al., 3 of 30 patients (10%) underwent graft. In our series, 2 of 16 postpubertal patients (12%) underwent corporotomy and grafting is similar as literature.¹¹ Our results were found to be compatible with the literature.

A better understanding of penile neurovascular anatomy has led to improved surgical techniques and treatment outcomes. Various surgical techniques have evolved; however, none are without complications and long-term follow-up studies are lacking.

The vast majority of penile cords without hypospadias can be corrected with simple degloving or plication techniques. No matter what technique we use, the protection of neurovascular structures and the urethral plate should be our main goal. Although penile cordis without hypospadias is rare, we argue that it can be performed in experienced centers with low complication rates and successful results.

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